## CLAIMS

What is claimed is:

29. A method for providing a description of a signal received from a lightning event, the signal having been modified by travel through a medium, the method comprising:

determining a plurality of frequency domain components of the signal;

determining a plurality of adjusted magnitudes for a multiplicity of the frequency domain components of the plurality; and

providing a description of a time domain signal corresponding to at least the plurality of adjusted magnitudes for the multiplicity of frequency domain components.

30. The method of claim 29 further comprising:

determining whether the signal has traveled over terrain; and

determining the plurality of adjusted magnitudes in accordance with whether the signal has traveled over terrain.

31. The method of claim 30 wherein adjusted magnitudes are determined in accordance with a filter function of frequency and conductivity when it is determined that the signal has traveled over terrain.

32. The method of claim 29 wherein applied adjustments mitigate an effect of conductivity of terrain.

33. The method of claim 29 wherein the description comprises a peak amplitude.

34. The method of claim 29 wherein the description comprises a rise time.

35. The method of claim 29 wherein adjusted magnitudes are determined in accordance with a first function of frequency and conductivity.

36. The method of claim 35 wherein the method further comprises:

determining conductivity as a second function of frequency; and

determining an adjusted magnitude in accordance with the first function and a result of the second function.

37. The method of claim 36 wherein determining the conductivity comprises:

determining a magnitude breakpoint frequency in the multiplicity of frequency domain components; and

determining the conductivity in accordance with the breakpoint frequency.

38. The method of claim 37 wherein determining the conductivity in accordance with the breakpoint frequency comprises computing a square root of the break point frequency.

39. The method of claim 29 wherein:

a. the method further comprises determining a plurality of adjusted phases for the multiplicity of frequency domain components of the plurality; and

b. providing the description comprises providing the description of the time domain signal further corresponding to at least the plurality of adjusted phases for the multiplicity of frequency domain components.

40. A memory device comprising indicia of instructions for a processor to perform the method of any of claims 29 through 39.

41. A sensor that provides a description of a signal received from a lightning event, the signal having been modified by travel through a medium, the sensor comprising:

a processor; and

a memory coupled to the processor, the memory comprising indicia of instructions enabling the processor to determine a plurality of frequency domain components of the signal, determine a plurality of adjusted magnitudes for a multiplicity of the frequency domain components of the plurality, and provide a description of a time domain signal corresponding to at least the plurality of adjusted magnitudes for the multiplicity of frequency domain components.

42. The sensor of claim 41 wherein the instructions further enable the processor to determine whether the signal has traveled over terrain, and determine the plurality of adjusted magnitudes in accordance with whether the signal has traveled over terrain.

43. The sensor of claim 42 wherein adjusted magnitudes are determined in accordance with a filter function of frequency and conductivity when it is determined that the signal has traveled over terrain.

44. The sensor of claim 41 wherein applied adjustments mitigate an effect of conductivity of terrain.

45. The sensor of claim 41 wherein the description comprises a peak amplitude.

46. The sensor of claim 41 wherein the description comprises a rise time.

47. The sensor of claim 41 wherein the instructions further enable the processor to determine each adjusted magnitude in accordance with a first function of frequency and conductivity.

48. The sensor of claim 47 wherein the instructions further enable the processor to determine conductivity as a second function of frequency, and determine an adjusted magnitude in accordance with the first function and a result of the second function.

49. The sensor of claim 48 wherein the instructions further enable the processor to determine a magnitude breakpoint frequency in the multiplicity of frequency domain components, and determine the conductivity in accordance with the breakpoint frequency.

50. The sensor of claim 49 wherein the instructions further enable the processor to compute a square root of the break point frequency.

51. The sensor of claim 41 wherein the instructions further enable the processor to determine a plurality of adjusted phases for the multiplicity of frequency domain components of the plurality,

and to provide the description of the time domain signal further corresponding to at least the plurality of adjusted phases for the multiplicity of frequency domain components.

52. A circuit for use in a lightning sensor, the lightning sensor for providing a description of a signal received from a lightning event, the signal having been modified by travel through a medium, the circuit comprising:

a processor; and

a memory coupled to the processor, the memory comprising indicia of instructions enabling the processor to determine a plurality of frequency domain components of the signal, and determine a plurality of adjusted magnitudes for a multiplicity of the frequency domain components of the plurality, thereby enabling the sensor to provide a description of a time domain signal corresponding to at least the plurality of adjusted magnitudes for the multiplicity of frequency domain components.

53. The circuit of claim 52 wherein the instructions further enable the processor to determine whether the signal has traveled over terrain, and determine the plurality of adjusted magnitudes in accordance with whether the signal has traveled over terrain.

54. The circuit of claim 53 wherein adjusted magnitudes are determined in accordance with a filter function of frequency and conductivity when it is determined that the signal has traveled over terrain.

55. The circuit of claim 52 wherein applied adjustments mitigate an effect of conductivity of terrain.

56. The circuit of claim 52 wherein the description comprises a peak amplitude.

57. The circuit of claim 52 wherein the description comprises a rise time.

58. The circuit of claim 52 wherein the instructions further enable the processor to determine each adjusted magnitude in accordance with a first function of frequency and conductivity.

59. The circuit of claim 58 wherein the instructions further enable the processor to determine conductivity as a second function of frequency, and determine an adjusted magnitude in accordance with the first function and a result of the second function.

60. The circuit of claim 59 wherein the instructions further enable the processor to determine a magnitude breakpoint frequency in the multiplicity of frequency domain components, and determine the conductivity in accordance with the breakpoint frequency.

61. The circuit of claim 60 wherein the instructions further enable the processor to compute a square root of the break point frequency.

62. The circuit of claim 52 wherein the instructions further enable the processor to determine a plurality of adjusted phases for the multiplicity of frequency domain components of the plurality, and to provide the description of the time domain signal further corresponding to at least the plurality of adjusted phases for the multiplicity of frequency domain components.

63. A lightning detection system that provides an estimated location of a lightning event, the system comprising:

a. an analyzer that provides the estimated location of the lightning event in accordance with a plurality of messages; and

b. a plurality of sensors that provide a message of the plurality respectively comprising sensor identification and a time of detecting the lightning event; each sensor comprising:

(1) a receiver that receives an event and provides a first time-domain signal in response to the lightning event;

(2) a waveshaping circuit that determines a frequency component of the first signal, adjusts at least one of the magnitude and phase of the component to provide an adjusted component, and determines a second time-domain signal in accordance with the adjusted component; and

(3) a transmitter that provides the message in accordance with the second time-domain signal.

64. The system of claim 63 wherein the waveshaping circuit further determines a plurality of frequency components of the first signal, adjusts a multiplicity of the frequency components of the plurality to provide a plurality of adjusted components. and determines a second time-domain signal in accordance with the plurality of adjusted components.

65. The system of claim 64 wherein the waveshaping circuit further adjusts frequency components of the multiplicity to provide a series of adjusted components having magnitudes that exhibit in log frequency domain a slope that is inversely proportional to frequency.

66. The system of claim 65 wherein the slope in log frequency is 1/f where f is frequency in Hertz.

67. The system of claim 64 wherein each component of the multiplicity corresponds to a respective frequency above 50 KHz.

68. The system of claim 64 wherein each component of the multiplicity corresponds to a respective frequency above 100 KHz.